

What is adult numeracy?

Katarzyna Zapala

Stowarzyszenie Integracja i Rozwój

Adult numeracy is a term that hides numerous competencies, skills based on a wide range of knowledge. Even though it has been appearing in variety of texts for years, it still has an unclear status in the scientific world. Especially referring to adult learners.

The first problem that a researcher encounters is a variety of definitions and terms that are so close, almost the same, and more than the same. The first part of the problem – the multiplicity of definitions – seems to be justified and results from the different approaches to the subject, but not in every case. The second one – unstandardised terminology – is more complicated and results from various reasons. Moreover, there is no one but minimum two types of numeracy: “adult numeracy” and “numeracy of young people”.

Issue no 1: Not one numeracy but: adult numeracy and numeracy of young people (also known as a high-school numeracy or simply mathematics) – searching for the meaning

According to some scholars there is no one idea of numeracy, when it comes to the type of learner. They divide it into (minimum) two concepts: adult numeracy and numeracy of young people in order to separate the idea of numeracy from school and give a new meaning of it for adults. Mernik (2012:2), for instance, highlights that adult numeracy is a kind of a functional mathematics that relates to real-life situations and is to solve the everyday problems. This way of understanding numeracy for adults is also stressed by Baczkiewicz (2022) for whom numeracy is meant as an ability to apply mathematical knowledge. Generally, researchers agree that there exists a significant gap between school mathematics (numeracy of young people) and the mathematics used in professional and everyday life which may be defined as a numeracy per se. The reason of these differences origins from the learning outcomes.

Learning at schools focuses on achieving the learning outcomes which are poorly adapted to life or everyday situations or – sometimes – fail to do so. What is more, there is an unspoken belief that it is not possible to integrate practical mathematics learning at school level because of the formal type of learning. Thus, the researchers show a significant gap between school mathematics and the mathematics used in professional and everyday life (for adults). This occurs because learning at school and working are two different activities, and school mathematics is often poorly adapted to workplace situations (Nunes, Schliemann, & Carraher, 1993). According to Turski, the curriculum is completely disconnected from everyday life, which is more surprising as there were already textbooks on arithmetic and algebra in the early 20th century that were full of examples from everyday life, like “Podręcznik Arytmetyki i Algebry” (eng. “Textbook of Arithmetic and Algebra”) by Placyd Dziwinski (Turski, 2016:72). Thus students cannot recognize the skills they gained and match them to their life as an employee, a citizen etc. Going further, mathematics is being taught at schools, and numeracy – trained at adult classes. There are different learning outcomes defined for young and adult students



studying numeracy. It is, of course, justified by various factors: type of teaching approach (formal and non-formal teaching), type of teaching methods applied, the understanding of numeracy/mathematics, whereas mathematics is a narrower term, less abstractive and applied at school system. Summing up, there is no one concept of numeracy but many of them – depending on the learner, and that is why there is exist no one definition of this concept.

As Hoogland (2009, 13) stated: “There are many definitions of numeracy and there are even more opinions on what numeracy education for adults should look like. But there seems to be one point of consensus on numeracy education: it should be functional in everyday life and as a consequence the mathematics should be connected with real life in one way or another”. Indeed, they exist closely related constructs in terms of their meaning but differ in a form. Some scholars believe that comparing numeracy to literacy may be helpful in defining the former. Indeed, it should be noticed that while there is a global consensus on literacy, numeracy seems to be still disordered. As found in PIAAC and other research that compares adult’s skills and performance in literacy with numeracy, there are substantial differences in the performances, outcomes and implications/consequences of lower or higher numeracy skilled adults compared to literacy skills. Efforts to improve literacy and numeracy levels of specific population groups are not necessarily implemented via the same mechanisms—they often require different experts, resources, and learning systems because of differences in the underlying knowledge components and learning trajectories. (OECD, 2021:70). On the other hand, they both are meant as a social practices in various contexts and this is what link them together.

What is adult numeracy then? It may be answer that it is a maths for adults who wish to become numerate. To be numerate then is to express a numerate behaviour and practices – “Establishing and extending numeracy capability requires the adoption, development or appropriation of both numerate behaviours and practices. These two constructs are distinct but complementary. Numerate behaviours are cognitive responses by an individual to particular situations where mathematics might provide advantage in addressing a real-world problem” (OECD, 2021:74). This concept comes from the understanding connected ideas: mathematics, literacy, language of mathematics, mathematical literacy which are regarded as synonyms for the former. It has been a long journey from the mid-20th century when “an increasing awareness of the relevance of mathematics for a well-functioning citizen was noticeable” to the first quarter of 21st century that has brought a learner in the middle of concept and focused on their relationship with the surrounding world (Common European Numeracy Framework - A Multifaceted Perspective On Numeracy, 2-3).

It need to be highlighted that adult numeracy encompasses more than just basic arithmetic skills. It involves application of mathematical thinking, understanding, and practical problem-solving in real-life situations. That is why, adult numeracy cannot be understood as a static set of skills. It involves the ability to comprehend and engage with mathematical concepts in a way that supports effective communication and problem-solving within diverse contexts (Vorthaus et al., 2011).

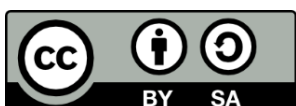


Issue no 2: Unstandardized terminology

Numeracy, numerical literacy, arithmetic, quantitative literacy, mathematics, mathematical literacy, mathematical skills, mathematic understanding/reasoning – these are not all the terms that are used in order to describe a range of knowledge, skills, and competencies that are defined as the ability to access and use mathematical information in order to handle the numerical demands of a range of situations in adult life (OECD, 2013). The conceptualisation of numeracy in an international context is a challenging undertaking. Like literacy, the term numeracy has multiple meanings across countries and languages. In some countries the term numeracy relates to basic skills which school children are expected to acquire as a prerequisite to learning formal mathematics at higher grades. In other countries the term numeracy encompasses a broad range of skills, knowledge and dispositions that adults should possess but it does not necessarily relate to formal schooling (OECD, 2021: 71).

The issue appears when there is a lack of an equivalent term in some languages or when there does exist a word but without a meaning – like in the Polish language where numeracy may be translated as *numeryczność* but the concept that is hidden by numeracy is descriptively translated as mathematical reasoning. This kind of translation, officially recommended by PI-AAC, may be misleading since it focuses on the math mostly not presenting the wider concept. Analogical issue appears in numerous languages since the term numeracy is not so popular or even present in the public perception.

Moreover, what is meant by numeracy also may vary between countries, and how it is understood when applied to school education compared to within adult education. As it was highlighted above, numeracy is not the same as mathematics, nor is it an alternative to mathematics. Today's students need both mathematics and numeracy. Whereas mathematics asks students to rise above context, quantitative literacy is anchored in real data that reflect engagement with life's diverse context and situations (Steen, 2001:10). There is then a great need to standardise terminology and popularise the concept of numeracy in the world.



BIBLIOGRAPHY

- Bączkiewicz, D. (2022), Analfabetyzm matematyczny – znaczenie społeczne, *Uniwersyteckie Czasopismo Socjologiczne*, 1, 65-74.
- Hoogland, K. (2009), Going beyond word problems, “Numeracy Briefing”, 13-16.
- Mernik, A.J. (2012), Mathematics in the everyday lives of adults, Seminar materials for workshop “Developing basic mathematical skills in adults and tackling numeracy – related learning difficulties” under the project “Education and training for professionals adult educational workers from 2011-2014.
- OECD (2021), The Assessment Frameworks for Cycle 2 of the Programme for the International Assessment of Adult Competencies, OECD Skills Studies, OECD Publishing, Paris, <https://doi.org/10.1787/4bc2342d-en>.
- Steen, L. (2001), Mathematics and Numeracy: Two Literacies, One Language The Mathematics Educator, *Jrnl Singapore Assoc. Math Educators* 6:1,10-16.
- Turski, L. (2016), Klęska nauczania matematyki i przedmiotów ścisłych w Polsce w XX wieku. Co można z tym zrobić?, “*Wiad. Mat.*” 52 (1), Polskie Towarzystwo Matematyczne, 69-76.
- Vorthaus J. et al., (2011), Review of research and evaluation on improving adult literacy and numeracy skills, Research Paper 61, Depoartment of Business, Innovation and Skills.



This material was produced in the Erasmusplus project **Numeracy in Practice**, projectnumber 2021-1-NL01-KA220-ADU-000 026 292. In this project, 11 partners in 11 countries worked together in designing, evaluating and improving the materials. All materials can be found on the website (www.cenf.eu).



UNIVERSITAT DE
BARCELONA



Asturia vzw



D!SORA

